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EXAMINER
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BRAGDON, REGINALD GLENWOOD

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* RICHARD M. H. NEW and MASON LAMAR WILLIAMS

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Appeal 2009-005529  
Application 10/674,081  
Technology Center 2100

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*Before* JOSEPH L. DIXON, HOWARD B. BLANKENSHIP, and THU A.  
DANG, *Administrative Patent Judges*.

DANG, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

## I. STATEMENT OF THE CASE

Appellants appeal from the Examiner's final rejection of claims 1-4, 6-13, 15, 16, and 18-25 under 35 U.S.C. § 134(a) (2002). Claims 5, 14, and 17 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b) (2008).

We affirm-in-part.

### A. INVENTION

According to Appellants, the invention relates to hard disk drives (Spec. 1, 1. 1).

### B. ILLUSTRATIVE CLAIM

Claims 1 and 10 are exemplary and are reproduced below:

1. A hard disk drive (HDD) comprising:

at least one rotatable disk;

at least one write element configured for writing data to the disk in isolated tracks and in bands, wherein at least two tracks establish a band; and

at least one HDD controller controlling the write element, the controller using a log-structured file system defining segments, each segment corresponding to at least one of: a respective band, and isolate tract, wherein the log-structured file system uses an error correction code (ECC) block size larger than a physical sector size of the disk, a cumulative ECC parity state between successive partial writes of an ECC block being retained.

10. A data storage system comprising:

disk means for storing data;

means for writing data to the disk in tracks and bands, wherein at least two tracks establish a band and wherein at least some bands are shingled; and

means for controlling the means for writing, the means for controlling using a log means for establishing a file system, wherein the log means uses a virtual address table (VAT) to remap sectors as require for shingled track writing.

### C. REJECTIONS

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Holland	US 5,367,669	Nov. 22, 1994
Ono	US 5,872,905	Feb. 16, 1999
Payne	US 6,212,047 B1	Apr. 3, 2001
Liu	US 2002/0071198 A1	Jun. 13, 2002
Asano	US 2003/0147167 A1	Aug. 7, 2003
Kasiraj	US 7,490,212 B2	Feb. 10, 2009
		(filed Sep. 29, 2003)

Rosenblum et al., *The Design and Implementation of a Log-Structured File System*, Proceedings of the 13<sup>th</sup> ACM Symposium on Operating Systems Principles and the Feb. 1992 ACM Transactions on Computer Systems; pp. 1-15, (1991).

Claims 1-4 and 6-9 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellants regard as the invention.

Claims 1, 2, and 4 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum and Asano.

Claim 3 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, Asano, and Payne.

Claims 6-8 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, Asano, and Ono.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, Asano, Ono, and Holland.

Claims 10, 11, 15, and 16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, and Ono.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, Ono, and Payne.

Claim 13 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, Ono, and Asano.

Claims 18 and 19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, and Holland.

Claim 20 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, Holland, and Payne.

Claim 21 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, Holland, and Asano.

Claims 22-25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the teachings of Liu, Rosenblum, Holland, and Ono.

Additionally, the Examiner provisionally rejected claim 18 on the ground of non-statutory, obviousness-type double patenting as being unpatentable over claim 9 of copending Application 10/674,093 (Ans. 4). Appellants present no arguments against this rejection, and as such, Appellants have waived any argument of error regarding the rejection. We summarily sustain this rejection.

## II. ISSUE

Has the Examiner erred in concluding that:

1) the language “a cumulative ECC parity state between successive partial writes of an ECC block being retained” (claim 1) is vague and unexplained either in the context of the claims or in the Specification?

2) Liu in view of Rosenblum and Ono would have suggested “a log means” that “uses a virtual address table (VAT) to remap sectors as required for shingled track writing” (claim 10) and Liu in view of Rosenblum and Holland would have suggested “at least one drive controller..., the drive controller for each drive writing data in shingled bands” (claim 18)? In particular, the issue turns on whether Liu would have suggested shingled track writing.

## III. FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

### *Appellants' Specification*

1. Appellants discloses that overlapping writing can be referred to as “shingled track writing,” wherein tracks are written such that each written track partially overlaps an immediately adjacent track that is contiguous to it, like shingles on a tiled rood (Spec. 2, ll. 7-11).

### *Liu*

2. Liu discloses data tracks in a disc drive that are divided into data blocks, wherein writes to a data block begin from track 0 to 9 and shall not start in between (pg. 6, [0068]; Fig. 13).

#### IV. ANALYSIS

##### *112, 2<sup>nd</sup> Paragraph*

As to claim 1, the Examiner finds that “[t]he language ‘[a] cumulative ECC parity state between successive partial writes of an ECC block is retained’ is vague and unexplained either in the context of the claims or in the specification” (Ans. 6). We agree with the Examiner.

We find that independent claim 1 on appeal is so abstract in recitation that the claim is deemed indefinite. That is, we cannot determine the metes and bounds of the claim as required to ascertain its scope. In particular, we are unclear as to what the phrase “a cumulative ECC parity state between successive partial writes of an ECC block being retained” is to include, mean or represent.

Though a claim is read in view of the Specification, we agree with the Examiner that Appellants’ Specification does not shed any light as to the meaning of the phrase. In fact, we are unclear as to how the clause is linked to the rest of the claims. That is, the language of claim 1 does not provide any antecedent basis for “an ECC block” of which “a cumulative ECC parity state between successive partial writes” are retained. In particular, the language of claim 1 does not make clear whether the ECC block is comprised within the hard disk drive or another structure. In fact, the claim does not even make clear as to whether the hard disk drive itself retains the cumulative ECC parity state. Instead, the clause seems to be left unconnected at the end of the claim.

Therefore, we find it unclear as to what the language of claim 1 is directed. When a claim becomes so ambiguous that one of ordinary skill in the art cannot determine its scope absent speculation, such claim is invalid

for indefiniteness. *In re Steele*, 305 F.2d 859, 862-63 (CCPA 1962).

Here, we conclude that claim 1 does not reasonably apprise those skilled in the art of its scope. Because we conclude that there are significant ambiguities with respect to claim 1 and thus to each of the claims depending therefrom, we affirm the Examiner's rejection under 35 U.S.C. § 112, second paragraph, against claim 1 and claims 2-4 and 6-9 depending therefrom.

*35 U.S.C. § 103(a)*

*Claims 1-4 and 6-9*

We reverse the outstanding rejection of claims 1-4 and 6-9 under 35 U.S.C. § 103(a), *pro forma*, because we conclude that at least independent claim 1 is indefinite under 35 U.S.C. § 112, second paragraph, as detailed above. That is, the claims on appeal must be reasonably understood without resorting to speculation to thereby prevent the rejections of the claims over prior art from being based on speculation and assumptions as to the scope of the claims. *See In re Steele*, 305 F.2d at 862. Presently, the claims on appeal do not adequately reflect what the disclosed invention is. We are therefore declining from utilizing speculation and conjecture in an attempt to ascertain the scope of the claims.

*Claims 10-13, 15, 16, and 18-25*

Appellants argue that “the relied-upon log structure in Rosenblum et al. is not used in shingled writing ..., nor is there any suggestion to do so” (App. Br. 9). Though the Examiner finds that “Liu also shows shingled track writing” (Ans. 14), after reviewing the record on appeal, we agree with the Appellants that the sections of the cited references referenced by the Examiner do not teach or suggest shingled track writing.



As defined by Appellants in the Specification, “shingled track writing” refers to overlapping writing, wherein tracks are written such that each written track partially overlaps an immediately adjacent track that is contiguous to it, like shingles on a tiled roof (FF 1). However, Liu discloses writing data tracks in consecutive manner, wherein the data tracks, though adjacent to each other, do not overlap (FF 2).

We agree with Appellants that there is no teaching or even suggestion in the sections cited by the Examiner of “a log means” that “uses a virtual address table (VAT) to remap sectors as required for shingled track writing” as required by claim 10 (App. Br. 9). Similarly, we agree with Appellants that there is no teaching or even suggestion in the sections cited by the Examiner in Liu and the applied references, alone or in combination, of “at least one drive controller..., the drive controller for each drive writing data in shingled bands” as required by claim 18 (App. Br. 10).

We find that Rosenblum, Ono, and Holland do not cure the noted deficiencies of Liu. Accordingly, we affirm the rejection of claim 10 and of claims 11, 15, and 16 depending therefrom over the teachings of Liu, Rosenblum, and Ono; and the rejection of claim 18 and claim 19 depending therefrom over the teachings of Liu, Rosenblum, and Holland.

We also find that Payne and Asano do not cure the deficiencies of Liu, Rosenblum, Ono, and Holland. Accordingly, we also affirm 1) the rejection of claim 12 over the teachings of Liu, Rosenblum, Ono, and Payne; 2) the rejection of claim 13 over the teachings of Liu, Rosenblum, Ono, and Asano; 3) the rejection of claim 20 over the teachings of Liu, Rosenblum, Holland, and Payne; 4) the rejection of claim 21 over the teachings of Liu,

Rosenblum, Holland, and Asano; 5) and the rejection of claims 22-25 over the teachings of Liu, Rosenblum, Holland, and Ono.

## V. CONCLUSION AND DECISION

We affirm the Examiner's finding of claims 1-4 and 6-9 as indefinite under 35 U.S.C. § 112, second paragraph, and claim 18 unpatentable on the ground of non-statutory, obviousness-type double patenting. We reverse the Examiner's finding of claims 10-13, 15, 16, and 18-25 as unpatentable under 35 U.S.C. § 103(a). We also reverse the rejection of claims 1-4 and 6-9 under 35 U.S.C. § 103(a), *pro forma*.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

## AFFIRMED-IN-PART

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